

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

FOR RELEASE
Thurs., May 7, 1959
12 noon

Address by T. Keith Glennan
Administrator
National Aeronautics and Space Administration
to the World Affairs Council of Philadelphia
May 7, 1959

The subject of international relations -- once the exclusive province of the Chief Executive and the members of the diplomatic service -- has become a principal topic of conversation and debate whenever thoughtful people come together. For this healthy situation, organizations such as yours, or the one with which I am more familiar, - The Cleveland Council on World Affairs - can take much of the credit. It has been said that the things we fear most are the things we do not understand. The educational activities of the World Affairs Councils all over this nation are tackling this problem effectively and with increasingly good results. Out of these efforts greater understanding of the complex problems of international relations and national commitments in the foreign field should result. And we should be better able to support those whose difficult job it is to handle these affairs.

Now normally, I obey the adage that the shoemaker should stick to his last. And today, I am not going to harangue you as an expert on the subject of foreign affairs -- a field in which I have a great interest but little professional competence. After all, I was trained as an engineer and have spent most of my life

in the management of industrial, research and educational institutions. But my present assignment in Washington does include some responsibilities in the field of international cooperation which I think may be of interest to you. If I may, then, I want to tell you something about the National Aeronautics and Space Administration and describe to you the activities which bring us into contact with other nations.

Actually, the very nature of our business - the exploration of outer space involving the orbiting of unmanned and manned satellites around this and other planets is such as to assure that our activities will be of interest and concern to all the other nations on the earth. The real question is -- can we utilize this new opportunity for research in space as a means for honest cooperation between nations -- or must the suspicion and name calling and propaganda extend into this field, too?

As is the case in most other fields, our most powerful international competitor in space is the Soviet Union. The very existence of the National Aeronautics and Space Administration is, to an extent, a result of the success that Russia has achieved in the opening heat of this competition. You are all aware of the startling impact, on people in this country and abroad, of Sputnik I -- the first successful Soviet satellite -- in early October 1957. Until that striking demonstration of Russian competence in rocketry, few Americans had recognized the full extent of Soviet progress in the techniques required to place satellites in orbit. I think it is fair to say that most of us were torn between desire to applaud a great

scientific and technological accomplishment and a troubled concern over having been bested, even temporarily, in a field where we had assumed, complacently, that we held at least a comfortable lead.

Our reaction -- as it has always been when we are unexpectedly confronted by a reverse of any kind -- was to mobilize our resources for a concerted effort to secure the position which we had thought we held. It is that mobilization of public opinion and individual enterprise that I have mentioned as one of the chief factors contributing to the creation of our national space administration. The Administration, the Congress, the press, and the scientific community agreed that our lag in rocket development had been largely due to the scattering of our effort among a variety of military, industrial, and professional agencies and laboratories, with diffuse leadership and no clear cut long range objectives. Out of their agreement on these fundamental facts, a unified civilian space authority -- NASA -- was born.

Perhaps this is the proper place for me to give you a thumb nail sketch of this new agency, its objectives and its relationships with the Department of Defense and other agencies of the Government. As a college president, I never lost an opportunity to talk about education -- one never knows what mind or what pocketbook may respond to the needs of a college such as the one I have had the honor to head -- Case Institute of Technology in Cleveland, Ohio. Now as a

public servant, I find myself eager to have people understand the nature and work of the Space agency, for here too, the understanding and support of thoughtful people is of the utmost importance.

A so-called Independent Agency, the National Aeronautics and Space Administration reports to the President and is charged with responsibility for the conduct of the nation's research, development and exploration in aeronautics and space except for those activities having to do primarily with the development of weapons systems, military operations of the defense of the United States. These latter, of course, are the responsibility of the Department of Defense.

It hardly seems possible, but this new agency has been in operation for a period of seven months -- since October first last year. Having read a good bit in the newspapers and magazines about NASA and some of the nation's space projects, you probably wonder how we could be so active in such a short period of time. This nation's acknowledged leadership in the field of aircraft design and operation has resulted, in large part, from the activities of a little known but very important governmental agency -- The National Advisory Committee for Aeronautics -- NACA. For 43 years NACA carried out its researches in comparative anonymity in three great laboratories and two field stations and provided the fundamental information on which most of our progress in the aircraft field

has been based. NACA, with its 8000 employees -- more than a third of them professionally trained in technology and the sciences -- was absorbed by NASA on 1 October 1958 and thus became the base on which the new agency has been erecting its organization to cope with its vastly enlarged responsibilities.

On 3 December, the President transferred to NASA from Army jurisdiction, the Jet Propulsion Laboratory located in Pasadena, California. This laboratory employs a staff of some 2450 people and is operated by the California Institute of Technology under contract to NASA. Projects whose principal objectives were to develop knowledge about the environment of outer space were transferred from military organizations to NASA and with them a number of highly trained engineers and scientists joined our ranks. These projects included the deep space and moon probes, the Vanguard satellite program and several programs directed toward the provision of more adequate propulsion systems for satellite and deep space activities. Thus we found ourselves with manpower, laboratories and an operating program of no small dimensions even though it had been developed in an unbelievably short time.

As of the end of this fiscal year -- June 30th next -- NASA will employ about 9000 people and our plans for FY 1960 call for an additional staff of about 1000 persons, mostly in the technical areas. Total funding for the current fiscal year, made up of the appropriation by the Congress to our predecessor, NACA, of a similar but smaller appropriation to NASA itself,

and of funds transferred to NASA by the military is in the neighborhood of 385 millions. Funds requested by the President and now under review by Congress will provide 485 millions for the 1960 fiscal year.

The relationship of our activities in NASA to those of the Department of Defense is one that some people find confusing. With a little explanation, I think the situation will become more understandable. Vehicles designed for peaceful exploration of space can also be used for military operations -- just as airplanes and automobiles can be used for military purposes. The Space Act separates these two kinds of activity, giving the bulk of the responsibility for the development of vehicles for peaceful exploration to NASA, and reserving the exploitation of their defense capabilities to the Armed Forces, as I have noted earlier in this discussion. At the same time, the Act creates channels to insure the co-ordination of research activities and developmental projects carried on by NASA or the Department of Defense.

Fundamentally, space is an extension of the atmosphere directly overhead. The rockets which we are using to roll back the frontiers of space are lineal descendants of the first Wright Brothers airplane, through the jet, which is an air-breathing rocket with wings. Until now, aircraft of the most advanced types have been developed normally by the military services, and only later converted to civilian use. This has

been true of rocket development too, in the opening phases of space exploration.

With a single exception -- the small Vanguard satellite vehicle, which was designed solely for scientific research as a contribution to the program of the International Geophysical Year -- all the satellites and space probes which have provided data on conditions outside the atmosphere -- the Russian Sputniks and Mechta, as well as our own Explorers, Pioneers, Discoverers, and Project Score -- have been lofted into space by rockets which were conceived originally as military boosters.

NASA has made use of these military vehicles, suitably modified, ever since it went into active operation in October of last year, because they were the only rocket booster systems available with power enough to put even a modest payload into orbit or to send an electronic messenger beyond the Moon. For at least another year or so, we will be dependent on military boosters for our basic power plants.

But NASA and the Department of Defense have already begun several projects which will provide, in the years ahead, a variety of propulsion systems that will permit the full exploitation of our interests in the space environment, whether for civilian or military purposes. With these projects under way, we are turning our full energies to the basic tasks of planning for space exploration and the application of the new knowledge we are sure to acquire to projects beneficial to man

the world over. And this brings me to a brief discussion of our activities in the international field.

I would like to quote briefly from the National Aeronautics and Space Act of 1958, establishing the agency. The Act opens with a declaration of the basic policy of the United States as it states -- "that activities in space should be devoted to peaceful purposes for the benefit of all mankind." It goes on to assert, as the first objective of our country in extra-terrestrial operations, that these activities are to be conducted in such a way as to "contribute materially to ... the expansion of human knowledge of phenomena in the atmosphere and space."

I ask you to consider those two statements -- that space activities "should be devoted to peaceful purposes for ... all mankind" and that they should "contribute ... to ... the expansion of human knowledge." That policy is in the enduring tradition of American political philosophy, from the Declaration of Independence to our own time. In matters of great consequence, we have usually attempted to look beyond the immediate prospect of gain or self-service -- to acknowledge the effect of our actions on humanity as a whole.

In accomplishing these objectives, we are directed by the Act to co-operate with other nations and groups of nations -- to promote, in every way possible, the peaceful applications of our work in space.

The specific language reads thusly -- "The Administration,

under the foreign policy guidance of the President, may engage in a program of international cooperation in work done pursuant to the Act, in the peaceful application of the results thereof, pursuant to agreements made by the President with the advice and consent of the Senate."

A very substantial beginning has been made by this nation on a program of international co-operation in space research. In the diplomatic field, as long ago as January 1957 -- months before the Russians orbited their first satellite -- the United States proposed in the United Nations that a study be made for assuring peaceful use of outer space. We continue to be prepared to participate in such a study.

In furthering our broader objective of cooperating with other nations and groups of nations in promoting peaceful applications of space programs, we have made greater progress. In November, 1958, this country joined with nineteen other countries in sponsoring a resolution calling for creation of a special United Nations committee to study and report on the peaceful uses of outer space.

This resolution was adopted by the General Assembly of the U. N. on the 13th of last December and eighteen countries, including the United States and the Soviet Union, were named as members of this Ad Hoc Committee on the Peaceful Uses of Outer Space. I am sorry to say the Soviet Union was not present yesterday when the Ad Hoc Committee held its first meeting.

I regret their unwillingness to take part in these discussions. I am glad to say, incidentally, that NASA is participating in the meeting of the Ad Hoc Committee, through its Deputy Administrator, Dr. Hugh L. Dryden, who has been designated as an alternate representative of the United States.

Another avenue of peaceful co-operation in space has been opened up by the Committee on Space Research - better known as COSPAR - of the International Council of Scientific Unions. Through the American scientists on this Committee, we have offered to make available to this international body, a propulsion vehicle system to carry aloft a payload to be developed and supplied by one or more members of the group. Consultation is now going forward and we have hopes that such a project will become a reality within two years.

One of the vital elements in any space operation is the tracking of the space payload. Through stations located at strategic spots around the globe, we are able to keep in constant radio communication with the flight of a satellite or an interplanetary vehicle, regardless of its path or the diurnal rotation of the Earth. In this way, we receive the data which it transmits. We study the effect of space conditions on its orbit or trajectory; make corrections in its attitude or course; and activate instruments for special purposes - for instance, to survey the far side of the Moon. In the case of a manned space craft, we will maintain essentially constant communication with the pilot by this means, so that we may determine his condition, gain from him information which might not be

available through instrumentation, and bring him back safely to a landing on the earth.

In this part of our program, we are fortunate in having close relations with many other countries, in all parts of the world. By contrast, the Soviet Union is largely confined to its own land area, and those areas immediately adjacent to it. A space vehicle passing out of direct contact with the Eurasian land mass is lost to the Russians, until the Earth's motion - or its own - brings it back into electronic view.

In addition to the Goldstone Tracking station that NASA operates in the Mojave Desert north of Barstow, California, and others at widely separated points on United States territory, we have for some time had the benefit of observations made by the 250-foot radio telescope at Jodrell Bank, in Manchester, England. We have similar arrangements with radio tracking facilities in half a dozen other nations.

Agreements were recently completed by NASA calling for the operation, by nationals of these countries, of tracking stations in Chile and Peru. Negotiations are now in progress with other nations covering the operation of similar stations, originally a part of the IGY program and several new stations. Together, these stations will give the United States - and the countries associated with us in space research - a worldwide tracking and data acquisition network, capable of keeping space vehicles under continual surveillance in any orbit or trajectory.

In this way, too, countries unable to devote great amounts of capital funds to the undertaking of space research can make a significant contribution to the total effort and can begin to develop their capabilities in this field.

Other nations have expressed varying degrees of interest in providing additional launching or tracking sites for use in joint operations with the United States, and in providing payload instrumentation to obtain specific data needed by their research institutions. For years, this nation has had cooperative programs in atmospheric research with Canada. In all of these projects, we are sincerely interested in teamwork with people in other countries. We will be delighted to discuss with any nation, including Soviet Russia, or any group of nations, the development of a truly cooperative program of scientific exploration in space.

I have a particular reason for my belief that a program of international cooperation in space is important. Science knows no national boundaries. As a matter of fact, science is truly an international language and provides a meeting ground for people where the solutions to problems are dependent on facts rather than on emotions. In the arena of international politics, men may connive and cajole, may practice deception and deceit and may fail to deal objectively with the problems that face them. In the scientific arena, there is an area of definite truth toward which men of all countries work.

Today's world is one which is increasingly dependent on technology and science for its welfare - even for its survival. Thus the technically trained man - the man who understands and accepts the basic scientific truths - is finding himself involved, to an ever increasing extent, in the debates on matters of international importance which rest, at least in part on an understanding of the meaning and application of his discoveries.

The facts of atomic fission, of the energy levels required for any of a variety of space missions, of the basic physical laws of nature - these are facts on which men of all nations can agree - and ultimately do. With technology so intimately inter-twined in our economic and material life, it seems clear to me that the ability to agree on the scientific facts of life provides the take-off point for ultimate agreement or compromise in the economic and political realms which are increasingly sensitive to technological developments.

It will take time - but if we refuse to be confused by the facts - if we are patient and learn how to use wisely the knowledge and advice of the scientist on matters where his expert knowledge is involved, real international progress will result, I am sure.

Now, before I close, - may I get something else off my chest? From time to time, I have been disturbed by the tendency of many Americans to oscillate between forlorn discouragement and heady optimism, as they view the day-to-day situation in the contest for leadership in space. Each time the Soviet

Union attains a noteworthy success with a satellite or a space probe - and the four that they are known to have launched have been most impressive - I hear it said that we are hopelessly behind them. Every time we place an instrumented package in space - and there have been nine so far, achieving various degrees of success - I am asked whether we haven't finally caught up with - or passed - the Russians.

The truth is that our standing at this moment, in the competition for technical mastery of space, is somewhere between the two extremes. We are not hopelessly behind the Russians. On the other hand, we haven't yet caught up, and certainly haven't left them far behind. Any other estimate of the situation would be based on irrational fear or, worse, on heedless optimism.

The diversity of our space experiments, and the ingenuity demonstrated by the results of our efforts to date, have given us valuable experience and increasing confidence in this new activity. We are supported by the world's largest and most versatile industrial complex. Of increasing importance to this program will be the co-operation which we can expect from our allies scattered over the free world.

Our object is not merely to secure the widest possible dispersion of our own space activities, but to foster international programs to the fullest extent that we can -- always bearing in mind the broad outlook of the statesmen who gave

us our charter -- that we think of the exploration of space as an undertaking for the energies of mankind as a whole -- not just another exercise to secure the political advantage of any one nation.

In this connection, I like to recall the words of my good friend, Dr. Lawrence M. Gould, President of Carleton College in Northfield, Minnesota. Dr. Gould said:

"I do not believe the greatest threat to our future is from bombs or guided missiles. I don't think our civilization will die that way. I think it will die when we no longer care - when the spiritual forces that make us wish to be right and noble die in the hearts of men... Notable civilizations have died from within, and not by conquest from without.... It happened slowly, in the quiet and the dark when no one was aware.

"If America is to grow great, we must ... rediscover and reassert our faith in the spiritual, non-utilitarian values on which American life has really rested from its beginning."

For many people of the generation now coming to maturity, those values will be found in space exploration, as we once found them in our migration to the West. They will be realized in the concerted effort by mankind to extend our province toward the stars.

- END -